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Calculation of the spin-lattice relaxation time in melts of entagled polymers

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Abstract

The spin-lattice relaxation times in polymer melts with the molecular weight above the critical value for the entanglement formation are calculated on the basis of the renormalized Rouse model developed by Schweizer, using an approach to theoretical description of the spin-lattice relaxation in entangled polymers based on the memory function formalism. A comparison of theoretical and experimental data on the spin-lattice relaxation in polyisobutylene and polydimethylsiloxane melts shows that the theoretical and experimental values of the spin-lattice relaxation time differ 1.4-3 times.